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10/590,343	08/24/2006	Yasushi Maruta	20165	8411

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SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER	
BAIG, ADNAN	

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4172	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,343	MARUTA ET AL.	
	Examiner	Art Unit	
	ADNAN BAIG	4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/20/2008, 8/24/2006, 8/20/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 is an improper dependant claim because it depends on itself and is interpreted to depend on Claim 1.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In an uplink communication channel is interpreted as communication from mobile terminal to base station. The claim is unclear in regards to the direction of communication of the radio reception unit. Multiplexed signals between an individual user and all users on the basis of receiving pilot symbols is interpreted as receiving in a downlink communication channel. With regards to the art of communications, the examiner interprets the radio reception unit to be a mobile terminal device.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 6,452,917) in view of Kikuchi (US 2003/0043775).

Regarding Claim 1, Leung discloses a CDMA receiving apparatus characterized by comprising:

a radio reception unit which outputs a radio reception output in an uplink communication channel on which an individual channel occupied by each user and a shared channel among all users are multiplexed on the basis of a CDMA scheme, by performing signal processing for a radio band signal received by a reception antenna, (Referring to Fig. 3, Leung illustrates a CDMA receiving apparatus, Col. 3 lines 30-40).

a channel estimation circuit which receives a signal corresponding to an individual channel of an arbitrary user which is obtained by performing despreading operation for the radio reception output, and calculates a channel

estimation value indicating phase and amplitude fluctuations due to a channel from phase/amplitude information after despreading of a known Pilot portion symbol,

Col. 5 Lines 20-23 (Referring to Fig.3, item 310 is an estimation circuit which calculates a phase rotation from an output despread signal (item 204).

Leung teaches a CDMA system where estimates of individual (pilot) and shared (traffic) channels are multiplexed simultaneously, Col. 3 lines 30-55.
Referring to Fig. 3, Leung illustrates a shared channel demodulation circuit which demodulates a signal corresponding to the shared (traffic) channel of the user, Col. 4 lines 57-67.

Leung does not expressly disclose a channel estimation value correction circuit which corrects phase error due to offset power fluctuation. However the preceding limitation is known in the art of communications.

Kikuchi teaches a CDMA communication where transmission power fluctuations are corrected and power is adjusted to according to channel estimation results, [0021].
(Referring to Fig.1, item 23 is an estimation circuit which calculates a phase rotation from an output despread signal (item 22-1 to 22-3), [0059-0060]).

Kikuchi teaches a channel estimation value correction circuit which corrects the channel estimation value from said channel estimation circuit on the basis of a reception power fluctuation due to uplink transmission power control which is caused by a timing offset between individual channels, (Referring to Fig. 2, item 12 is responsible for transmission power control from base station to terminal, where offset information (item 24) calculation is performed in Fig. 1 item 23. Item 23g (Fig. 1) sets ratio parameters in instances of power fluctuations [0069-0071], and a phase calculation is determined through item 23h.
The output of the calculated estimation values and power offset calculations are sent to the phase correction circuit (correction circuit), [0055]).

Therefore it would have been obvious to one of ordinary skill in the art to implement a shared (traffic) channel using an individual (pilot) channel and demodulate the resulting signal as taught by Leung, while performing channel estimation correction for transmission power control fluctuations in a CDMA system as taught by Kikuchi, to make efficient use of circuit resources, suit more data, and control channel accuracy.

Regarding Claim 2, the combination of Leung and Kikuchi disclose a CDMA receiving apparatus according to claim 1, characterized by further comprising a reception power difference correction coefficient calculation circuit which receives

timing offset information of the user and uplink transmission power control command information, and calculates a reception power difference correction coefficient, which corrects a reception power fluctuation, by estimating a reception power fluctuation corresponding to an uplink power control command in a timing offset interval, (Referring to Fig. 1, item 23h receives offset information from item 24 and uplink power control information from items 23e and 23f (SNR measurement) through a controller 23g, [Kikuchi, 0067-0071], [Kikuchi, 0074-0075, 0079-0080].

wherein said channel value correction circuit corrects a channel estimation value from said channel estimation circuit on the basis of a reception power difference correction coefficient from said reception power difference correction coefficient calculation circuit, (Referring to Fig.1, Kikuchi illustrates phase correction circuit, items (27-1) - (27-3), which perform correction of the received signal using power offset and channel estimate values, [Kikuchi, 0113]).

Regarding Claim 3, the combination of Leung and Kikuchi disclose a CDMA receiving apparatus according to claim 1, characterized in that said channel estimation value correction circuit corrects a plurality of channel estimation values before and after the timing which are obtained by said channel estimation circuit on the basis of the reception power fluctuation, and then outputs the channel estimation values after correction upon performing averaged weighting

thereof, (Referring to Fig. 1,Kikuchi illustrates a phase correction unit (27-1) - (27-3), which corrects a plurality of estimation values, [0108]).

Regarding Claim 4, the combination of Leung and Kikuchi disclose a CDMA receiving apparatus according to claim 4, characterized by further comprising a path detection circuit which detects path delays associated with an individual channel and shared channel of the user from the radio reception output, Referring to Fig. 1, Kikuchi illustrates a path detection (item 20), detects path delays [0046-0047].

an individual channel despreading circuit which outputs a signal corresponding to the individual channel of the user by performing despreading operation for the radio reception output on the basis of the path delay of the individual channel of the user, Referring to Fig. 1, Kikuchi illustrates (Items (22-1) – (22-3)) performing despreading operation on the basis of the path delay, [0049].

and a shared channel despreading circuit which outputs a signal corresponding to the shared channel of the user by performing despreading operation for the radio reception output on the basis of the path delay of the shared channel of the user, Referring to Fig. 1, Kikuchi illustrates (Items (26-1) – (26-3)) performing despreading operation on the basis of the path delay, [0052]. Leung illustrates a shared channel despreading circuit in Fig. 3, (item 204), Col. 2 lines 35-38.

Regarding Claim 5, the combination of Leung and Kikuchi disclose a CDMA receiving apparatus according to claim 4, characterized by further comprising an individual channel demodulation circuit which demodulates a Data portion of the individual channel of the user from the signal corresponding to the individual channel on the basis of the channel estimation value, Referring to Fig. 1(Kikuchi), item 23a demodulates the data of the individual channels, [0060] lines 1-5. Referring to Fig. 4, Leung illustrates demodulation of an individual (pilot) channel at step 408.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 6,452,917) in view of Kikuchi (US 2003/0043775) as applied to claims 1-5 above, and further in view of Chow (US 2005/0213529).

Regarding Claim 6, the combination of Leung and Kikuchi disclose a CDMA receiving apparatus according to claim 5, characterized by further comprising an individual channel path demodulation unit, for each individual channel of the user, which comprises said individual channel dispreading circuit, said channel estimation circuit, and said individual channel demodulation circuit, (Referring to Fig. 1, Kikuchi illustrates estimation being performed on an individual channel path unit each containing an individual channel dispreading circuit(item (27-1)-

(27-3)) [0060], individual estimation circuit (item 23c-23d) [0060-0061], and individual demodulation circuit (23a-23b) [0060-0061]).

a shared channel demodulation unit, for each shared channel of the user, which comprises said shared channel despreading circuit, said channel estimation value correction circuit, and said shared channel demodulation circuit, (Referring to Fig. 3, Leung illustrates estimation being performed on a shared channel path unit each containing a shared channel dispreading circuit(item 204) Col. 2 lines 35-38, shared demodulation circuit (item 305, Col. 4 lines 57-67), channel estimation value correction circuit (Kikuchi, [0055]).

an individual channel RAKE combining circuit which outputs an individual channel demodulation result on the user which is obtained by RAKE-combining demodulation outputs from said individual channel demodulation circuits of said individual channel path demodulation units, (Referring to Fig. 1, Kikuchi illustrates an individual channel rake combining circuit (item 29) , [0056] lines 6-9).

The combination of Leung and Kikuchi does not expressly disclose a shared channel Rake combining circuit. However the preceding limitation is known in the art of communications. Chow discloses a CDMA receiver where rake combining

circuits are implemented with estimation results for individual and shared channels.

Referring to Fig. 5, Rake units 74 and 75 can be seen receiving estimation values from items 78 and 70. The first despread/Rake unit contains shared or dedicated physical control channel traffic (DPCH) [0018]-[0019 lines 1-3]. Individual or Common pilot channel (CPICH) [0019 lines 6-10], is sent to the second despread/Rake unit which also contains traffic data, [0098-0102].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the system of the combination Leung and kikuchi in view of the system of Chow, to include separate Rake combining units in order to output demodulation results for shared and individual channels.

7. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 6,452,917) in view of Kikuchi (US 2003/0043775).

Regarding Claim 7, Leung discloses a CDMA receiving method characterized by comprising:

the radio reception step of outputting a radio reception output in an uplink communication channel on which an individual channel occupied by each user

and a shared channel shared among all users are multiplexed on the basis of a CDMA scheme, by performing signal processing for a radio band signal received by a reception antenna, (Referring to Fig. 3, Leung illustrates a CDMA receiver, Col. 3 lines 30-40).

the channel estimation step of receiving a signal corresponding to an individual channel of an arbitrary user which is obtained by performing despreading operation for the radio reception output, and calculating a channel estimation value indicating phase and amplitude fluctuations due to a channel from phase/amplitude information after despreading of a known Pilot portion symbol, Col. 5 Lines 20-23 (Referring to Fig.3, item 310 is an estimation circuit which calculates a phase rotation from an output despread signal (item 204).

Leung teaches a CDMA system where estimates of individual (pilot) and shared (traffic) channels are multiplexed simultaneously, Col. 3 lines 30-55.
Referring to Fig. 3, Leung illustrates a shared channel demodulation step which demodulates a signal corresponding to the shared (traffic) channel of the user, Col. 4 lines 57-67.

Leung does not expressly disclose a channel estimation value correction step which corrects phase error due to offset power fluctuation. However the preceding limitation is known in the art of communications.

Kikuchi teaches a CDMA communication where transmission power fluctuations are corrected and power is adjusted to according to channel estimation results, [0021].

(Referring to Fig.1, item 23 is an estimation circuit which calculates a phase rotation from an output despread signal (item 22-1 to 22-3), [0059-0060].

Kikuchi teaches a channel estimation value correction step of correcting the channel estimation value calculated on the basis of a reception power fluctuation due to uplink transmission power control which is caused by a timing offset between individual channels, (Referring to Fig. 2, item 12 is responsible for transmission power control from base station to terminal, where offset information (item 24) calculation is performed in Fig. 1 item 23. Item 23g (Fig. 1) sets ratio parameters in instances of power fluctuations [0069-0071], and a phase calculation is determined through item 23h.

The output of the calculated estimation values and power offset calculations are sent to the phase correction circuit, [0055]).

Therefore it would have been obvious to one of ordinary skill in the art to implement a shared (traffic) channel using an individual (pilot) channel and demodulate the resulting signal as taught by Leung, while performing channel estimation correction for transmission power control fluctuations in a CDMA

system as taught by Kikuchi, to make efficient use of circuit resources, suit more data, and control channel accuracy.

Regarding Claim 8, the combination of Leung and Kikuchi disclose a CDMA receiving method according to claim 7, characterized by further comprising the reception power difference correction coefficient calculation step of receiving timing offset information of the user and uplink transmission power control command information, and calculating a reception power difference correction coefficient, which corrects a reception power fluctuation, by estimating a reception power fluctuation corresponding to an uplink power control command in a timing offset interval, (Referring to Fig. 1, item 23h receives offset information from item 24 and uplink power control information from items 23e and 23f (SNR measurement) through a controller 23g, [Kikuchi, 0067-0071], [Kikuchi, 0074-0075, 0079-0080].

wherein the channel value correction step comprises the step of correcting a calculated channel estimation value on the basis of a calculated reception power difference correction coefficient, (Referring to Fig.1, Kikuchi illustrates phase correction circuit, items (27-1) - (27-3), which perform correction of the received signal using power offset and channel estimate values, [Kikuchi, 0113]).

Regarding Claim 9, the combination of Leung and Kikuchi disclose a CDMA

receiving method according to claim 7, characterized in that the channel estimation value correction step comprises the step of correcting a plurality of channel estimation values before and after the obtained timing on the basis of the reception power fluctuation, and the step of outputting the channel estimation values after correction upon performing averaged weighting thereof, (Referring to Fig. 1,Kikuchi illustrates a phase correction unit (27-1) - (27-3), which corrects a plurality of estimation values, [0108]).

Regarding Claim 10, the combination of Leung and Kikuchi disclose a CDMA receiving method according to claim 7, characterized by further comprising the path detection step of detecting path delays associated with an individual channel and shared channel of the user from the radio reception output, Referring to Fig. 1, Kikuchi illustrates a path detection (item 20), detects path delays [0046-0047].

the individual channel despreading step of outputting a signal corresponding to the individual channel of the user by performing dispreading operation for the radio reception output on the basis of the path delay of the individual channel of the user, Referring to Fig. 1, Kikuchi illustrates (Items (22-1) – (22-3)) performing despreading operation on the basis of the path delay, [0049].

and the shared channel despreading step of outputting a signal corresponding to the shared channel of the user by performing dispreading operation for the radio reception output on the basis of the path delay of the shared channel of the user, Referring to Fig. 1, Kikuchi illustrates (Items (26-1) – (26-3)) performing despreading operation on the basis of the path delay, [0052]. Leung illustrates a shared channel despreading circuit in Fig. 3, (item 204), Col. 2 lines 35-38.

Regarding Claim 11, the combination of Leung and Kikuchi disclose a CDMA receiving method according to claim 10, characterized by further comprising the individual channel demodulation step of demodulating a Data portion of the individual channel of the user from the signal corresponding to the individual channel on the basis of the channel estimation value, Referring to Fig. 1(Kikuchi), item 23a demodulates the data of the individual channels, [0060] lines 1-5. Referring to Fig. 4, Leung illustrates demodulation of an individual (pilot) channel at step 408.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung (US 6,452,917) in view of Kikuchi (US 2003/0043775) as applied to claims 1-5 above, and further in view of Chow (US 2005/0213529).

Regarding Claim 12, the combination of Leung and Kikuchi disclose a CDMA receiving method according to claim 11, characterized by further comprising the

individual channel path demodulation step, for each individual channel of the user, which comprises the individual channel despreading step, the channel estimation step, and the individual channel demodulation step, (Referring to Fig. 1, Kikuchi illustrates estimation being performed on an individual channel path unit each containing an individual channel dispreading circuit(item (27-1)-(27-3)) [0060], individual estimation circuit (item 23c-23d) [0060-0061], and individual demodulation circuit (23a-23b) [0060-0061]).

the shared channel demodulation step, for each shared channel of the user, which comprises the shared channel despreading step, the channel estimation value correction step, and the shared channel demodulation step, (Referring to Fig. 3, Leung illustrates estimation being performed on a shared channel path unit each containing a shared channel dispreading circuit(item 204) Col. 2 lines 35-38, shared demodulation circuit (item 305, Col. 4 lines 57-67), channel estimation value correction circuit (Kikuchi, [0055]).

the individual channel RAKE combining step of outputting an individual channel demodulation result on the user which is obtained by RAKE-combining demodulation outputs from the individual channel demodulation steps of the individual channel path demodulation steps, (Referring to Fig. 1, Kikuchi illustrates an individual channel rake combining circuit (item 29) , [0056] lines 6-9).

The combination of Leung and Kikuchi does not expressly disclose a shared channel Rake combining circuit. However the preceding limitation is known in the art of communications. Chow discloses a CDMA receiver where rake combining circuits are implemented with estimation results for individual and shared channels.

Referring to Fig. 5, Rake units 74 and 75 can be seen receiving estimation values from items 78 and 70. The first despread/Rake unit contains shared or dedicated physical control channel traffic (DPCH) [0018]-[0019 lines 1-3]. Individual or Common pilot channel (CPICH) [0019 lines 6-10], is sent to the second despread/Rake unit which also contains traffic data, [0098-0102].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the system of the combination Leung and kikuchi in view of the system of Chow to include separate Rake combining units in order to output demodulation results for shared and individual channels.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADNAN BAIG whose telephone number is (571) 270-

7511. The examiner can normally be reached on Mon-Fri 7:30m-5:00pm eastern Every other Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis West can be reached on 571-272-7859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADNAN BAIG/
Examiner, Art Unit 4172

/Lewis G. West/
Supervisory Patent Examiner, Art Unit 4172